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PROGNOSIS IN CHRONIC VALVULAR DISEASE OF THE HEART.

An Address delivered before the North London Medico-Chirurgical Society.

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PROGNOSIS IN CHRONIC VALVULAR DISEASE OF THE HEART.

AN ADDRESS DELIVERED BEFORE THE NORTH LONDON MEDICO-CHIRURGICAL SOCIETY.

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I WAS highly flattered by the request that I should deliver the opening address of the present session of the North London Medico-Chirurgical Society. At the same time I felt that I should best show my appreciation of the honor that you have done me if I were to submit something that might be of real service to you as busy practitioners burdened with responsibility. Therefore I have selected for my address the Prognosis of Chronic Valvular Disease of the Heart, a subject that gives us all daily concern and one on which I am convinced a good deal can be said with advantage.

But it is one thing to choose the subject of an address like the present; another thing altogether to treat it with success. How am I to communicate to you in the course of a short hour the considerations and conclusions on a matter of first-rate importance, which are the outcome of many years of experience and thought, and which guide me in my own work? The extensive and varied material of which an essay on prognosis in heart disease has to be constructed must be somewhat artificially arranged; and there is great risk that the result may be formal and dry, or, let us say, more adapted to instruct students than to satisfy a gathering of qualified men. Still, I felt that I must take this risk, and ask you to allow me to review the facts and arrange the conclusions to be drawn from them in a somewhat more systematic order than you do in your general practice.

Indeed, it will be well for us to consider in the first place, if but for a moment, the subject of prognosis in general. Prognosis is one of the great applications of the medical sciences, side by side with preventive, remedial, and palliative treatment; and it demands the exercise of as much intelligence, trained by means of study and observation, as does Public Health or practical therapeutics. It is

a common complaint that treatment is neglected as a subject of medical education. If this be just, what are we to say of instruction in prognosis! The student has mainly to learn it up from textbooks on systematic medicine; but too often we find that in these prognosis is discussed in a manner which is not only useless practically, but even gives an erroneous notion of what prognosis truly is. We are told, for example, with respect to a certain acute disease, that the majority of cases may be expected to recover; of another, that the mortality is twenty per cent. Now, you will observe that these two statements, valuable as they may appear to be for prognostic purposes, are not only of no value for estimating the prognosis in the individual case when it comes before you, but strictly are not statements of prognosis at all. Both of them are accounts of the mortality of the respective diseases; statements of facts. But prognosis, or forecasting or prophecy, is not a statement of facts. Practical prognosis—*i.e.*, prognosis in individual cases—is an expression of opinion that a man will die, or will live, or will be permanently disabled, or will live the average term of life, or may marry with safety and advantage, or will never be fit to enter the army, or will benefit by retiring at once from work. Of course, like every opinion that is worth stating or accepting, prognosis in practical medicine is founded on facts; and what the student ought to be taught in theoretical medicine is which of the many facts he learns respecting each disease can be employed in estimating and framing a prognosis. Such parts of his knowledge as he can thus employ are called “the elements of prognosis.” Experienced practitioners, like my present audience, have almost unconsciously sifted the facts respecting each of the more common diseases from this point of view so thoroughly for themselves, that they can tell with wonderful correctness what is going to happen. They say they can do so “from experience,” by “common sense,” by “the look of the case,” they “hardly know how.” Now this is empiricism in prognosis: valuable in the hands of the experienced practitioner, but useless to the student or young practitioner, because not available by him. Prognosis in pathology, like prognosis in meteorology or weather-forecasting, ought to be rational, that is, a practical application of scientifically determined facts. Of these there is now a vast number, and still a great and steady increase; and every portion of this knowledge has some bearing, direct or indirect, constructive or destructive, on prognosis, just as it has on treatment.

Is it not possible to analyze the settled facts of the different diseases, to collect from them the elements of prognosis, and to present them in a rational form?

Here, I confess, I feel I must apologize to you. As a teacher I find I have drifted into a didactic not to say dogmatic style, which ill-becomes me in addressing a meeting of men of my own age and experience. My answer to the charge which you may reasonably bring against me will consist in an attempt to show you how simple and how useful is the method of framing a prognosis on the lines which the previous considerations suggest.

The elements of prognosis in every disease are the facts in our possession with respect to its etiology, its pathological anatomy, and its clinical characters and course. In practice, as well as in theory, it is useful to keep these three orders as far as possible apart and to consider them separately. Perhaps I had better illustrate my meaning here by a reference to prognosis in an acute disease. Take a case of acute pneumonia—a peculiar instance of anxious practical prognosis. Is the patient going to live or to die? You give your opinion. From what facts have you formed it? What are the elements of your forecast? Let us see. The pulse, the respiration, the pulse-respiration ratio, the temperature, the nervous phenomena, delirium, typhoidal symptoms, clearness of mind and expression, the extent of lung involved, the invasion of one lung only or of two, the situation of the lesion, the stage of the lesion, the characters of the sputa, the state of the urine, the soundness of the heart; and as careful and experienced observers, you will certainly add two other bits of knowledge,—first, the patient's previous record of habits and life generally; secondly, the cause of the pneumonia, whether septic, typhoidal, influenzal, due to drain-poisoning, contagious or not. This is a long list of the elements of which the prognosis is constructed in pneumonia, yet you will allow that there is not one of them that you can afford to overlook. Now what I say is that these facts should be arranged in different orders when they are presented to the student, and reviewed in the same fashion when they are employed by the practitioner. First, there are the etiological facts. To this order belong the kind or type of the pneumonia, its cause, which of the recognized micro-organisms or toxins is present, a point which unhappily is often easily settled on the second day by observing how the patient is already overwhelmed by the disease. And to the etiological order also belongs that prog-

nostic element which you might well consider the most important of all—the man's record or previous history. Next we take the pathological facts—the extent, situation, distribution and stage of the pulmonary lesion, the state of the rest of the pulmonary tissues, and the condition of the other viscera, particularly the heart, arteries, and kidneys. Each individual fact under this head is of some service to you; each has its prognostic value which you may estimate, and which constitutes a "point" in your judging or judgment of the case, for recovery or against it. Lastly, there is the great order of purely clinical facts—such as are before you at the bedside—purely clinical phenomena and clinical course—the temperature, the rate and characters of the breathing, the pulse, the nervous symptoms, the presence of complications, the sputa; and the day of the illness, the features of its invasion, development, and progress, and the proximity of crisis.

Thus, it appears that in acute pneumonia, which I have used, as I proposed, solely as a useful because readily appreciable illustration, the many facts that are turned to account in framing a prognosis may be arranged in different orders, and arranged thus with great advantage. With a little trouble and thought and practice, we can fairly estimate the chances of recovery in every acute disease about which we have substantial knowledge.

If this method is useful in acute disease, how essential it must be in chronic disease, where prognosis relates to years, and involves the review and correct appraisalment of a vast number of facts and considerations, complexly related to each other, particularly in chronic valvular disease, the course of which in great measure depends on the patient's own management of himself. With this conviction in our minds let us now turn to the proper subject of my address, and examine the different kinds of knowledge out of which we frame a prognosis of chronic valvular disease of the heart.

The rough-and-ready or routine prognosis is familiar: the patient is disabled for laborious, exciting or harassing occupations; his life is insecure and uninsurable; death may occur suddenly at an unexpected moment. This broad statement is variously elaborated and paraphrased in equally indefinite terms. Now, such a prognosis was once all that could be offered to a patient or a patient's friends—in the days when etiology and pathological anatomy and clinical investigation were not so full and exact as they are now. How very different it is at the present time I shall try to show you.

The Etiological Elements of Prognosis.—1. When we have completed our investigation of a case of chronic valvular disease of the heart and proceed to frame the prognosis, the first question that we ought to put to ourselves is what prospect does the origin or nature of the disease afford us? A different prospect with each of the ordinary kinds of lesion. An old rheumatic lesion is a scar, and nothing more, a cicatrix which has distorted a valve or stenosed an orifice: this is an affair of the past, rarely progressive. This is a relatively safe condition, and the prognosis is correspondingly favorable. I remember as if it were but yesterday, although it is now twenty-seven years ago, the anxiety with which I attended a boy of fifteen, the son of one of my best friends, for acute rheumatic pericarditis and endocarditis of the aortic valves producing incompetence. That patient is still alive and active and promises to live the average term of life, although a proposal for insurance would not have been entertained by any company—at any rate in those days. A lesion of syphilitic origin is a different matter altogether: possibly recent, possibly active, associated with active disease of the coronary arteries and myocardium. This is a dangerous process, and the prognosis is highly unfavorable: life is relatively short and quite insecure; death may be sudden. It is remarkable how frequently syphilitic lesions, including syphilitic lesions of the heart, are found in the bodies of persons admitted dead into a London hospital. My own observation agrees with this. I have known a strong-looking man of forty with aortic incompetence, in whose case the existence of cardiac pain and a history of syphilis induced me to offer a fatal prognosis, die in a few days, much to the surprise of his medical attendant who was not prepared for so rapid a termination of the case. Is the valvular lesion atheromatous? Then, again, we have to forecast less favorably. Not but that many persons live for years with an aortic systolic murmur significant of an atheromatous arch, but that with this there often is associated atheroma of the coronary branches which may at any moment prove fatal, or more slowly lead to myocardial degeneration and failure of the heart. In the former event, sudden death is, sometimes at least, due to rapid formation of a thrombus on a diseased area of a coronary artery, the result of some temporary depression of the circulation or alteration of the blood. And a similar event may occur, to our disappointment and distress, in these cases of long-standing atheroma just when we are congratulating ourselves that we have overcome the cardiac fail-

ure and removed the dropsy by means of judicious treatment. Or the cause of the valvular disease may have been acute strain or chronic strain, and these must be reckoned with as fairly as possible in forecasting the expectation of life and health, neither of which is by any means secure when the cusps or the chordæ tendineæ or other part of the valvular apparatus is either torn or worn.

Now let me ask you whether this element of prognosis in chronic valvular disease is sufficiently respected in routine practice? I fear it is not. Does our habitual diagnosis in such a case include a distinct conclusion as to the kind, that is, the nature or origin of the process which has damaged the valve? I doubt it. How many of us, having found a mitral systolic murmur, really trouble to ask ourselves how it originated. We satisfy ourselves in busy practice with the discovery of "valvular disease," just as we do with such an incomplete diagnosis as "pleurisy" or for that matter "sore throat"! And yet you will see that for our present purpose, as well as to guide us to rational treatment, this is an indispensable subject of inquiry. Its importance is recognized at once when the point is definitely stated. I repeat: never let us neglect this element of prognosis in cardiac disease. It is one of the keys to prognosis in every instance, and most strikingly to the future of fatty degeneration, and to sudden death in coronary disease otherwise.

2. The second order of prognostic elements is derived entirely from pathological anatomy. It includes the *seat* of the valvular lesion—whether aortic, mitral, tricuspid or pulmonary; the *form* of the lesion—whether obstructive or regurgitant, or both, at each of the orifices; and the *extent* or degree of the damage to the valvular apparatus. Further, it comprises the condition of the cardiac walls—whether hypertrophied, or dilated, or both, the nutritive condition of the myocardium and that of the vessels, as well as the state of the other viscera. All these anatomical facts can be learned by ordinary clinical examination—by a study of the symptoms and signs. They are the facts on which prognosis in heart disease as it is learned from the books is chiefly based. We are told that aortic lesions are less favorable than mitral; that mitral stenosis is more unfavorable than mitral incompetence; that some lesions are so slight that they do not sensibly disorder the circulation; that tricuspid systolic murmur is ominous because usually a manifestation of cardiac failure, but may be expected to disappear if the failing heart respond to remedies. Now every word of this is correct—so correct that I need

not dwell on it to-night; but how doubtful is its value standing by itself, that is, without that first order of considerations—the etiological, which we have just reviewed! Aortic incompetence, it is true, is a relatively unfavorable *form* of lesion; but it is chiefly unfavorable because it is so often degenerative or specific, and so seldom rheumatic in its *nature*. Therefore, whilst we give their due to the seat and form of the valvular disease, do not let us be led away by them, that is, by the attractive murmurs which reveal them to us, from what is less evident on the surface, but all important, the essential origin or kind of the pathological change.

3. The third series of facts which we employ as guides to prognosis in valvular disease of the heart is purely clinical—the phenomena of the functional condition of the circulation—of the adequacy or inadequacy of the heart and vessels as a great physiological system. First and broadly, is there compensation or failure: is the man free from what are called “the symptoms of heart disease,” or does he suffer from precordial distress, palpitation, pain, dyspnoea, dropsy—the manifestations of an incompetent circulation? The two conditions are entirely different clinically; but we know that compensation may at any time pass into failure if the conditions of life, that is the influences under which the heart is nourished and is worked, become unfavorable. Therefore, if compensation is present and the question be whether it can be maintained, these influences must be understood as well as how far they can be controlled or anticipated. If the heart has failed, and we are asked for a prognosis, we must never fail to discover if we can which of the many possible influences is to blame, and to consider whether it be within our control. We find that something or other, as a rule quite independent of the lesion, is at work when the heart fails: something altogether new has occurred to break compensation; in connection with the patient’s occupation, his food and other ingesta, including stimulus, the nervous influences of every kind around him, the different diseases, acute and chronic, to which he is exposed, particularly such as involve the circulation, the strains of growth and development, and of special functional activity, as in women, and the advent and progress of old age.

Let us consider in the first place how this all-important factor in the progress or history of a case of valvular disease is to be correctly reckoned with in the prognosis of a case of compensated disease of the heart? Whether the lesion be rheumatic or be syphilitic,

whether it be aortic or mitral, whether it be obstructive or incompetent, the future of it, and with its future the correct prognosis of it, hang after all very much upon the conditions of life in which the patient lives and in which he may be expected to live. If our forecast is to be correct we must know these: first, what every subject of valvular disease may anticipate, and secondly, what the particular individual before us may anticipate. Now you may say that this is a personal question only—a question relating to each individual case as it comes before us. If the patient be a poor overworked intemperate man, compensation will speedily fail; if he be a healthy, well-off and well-living youth, he may live for fifty years. This is true; but can we not differentiate more particularly the common causes of cardiac failure in a way which may be of immediate service to us in practical prognosis? I believe that we can, and I propose to search for them and to submit them to you in the connection which I regard as of greatest practical value to you: namely, as they occur and are to be anticipated, at each of the principal periods of life.

First, suppose we are asked for our opinion of the prospect of life and health in a lad of fourteen to nineteen who is the subject of valvular disease of the heart with compensation. Having estimated the etiological and pathological elements of the prognosis, as I have recommended (let us say having given due weight to the facts that the disease in this instance was caused by rheumatic endocarditis and consists in mitral incompetence), we ask ourselves what circumstances or conditions of life influence compensation for good or for ill in such a patient, and will continue to influence it for some years. We have no difficulty in answering this question. In the first place rheumatism is a standing danger. Unless care be taken, this boy may at any time have a return of rheumatism in acute or subacute form, or perhaps more likely nothing more disturbing to his people than sore throat, or growing pains, or erythema, or pleurisy, with a little feverishness—but unfortunately with fresh endocarditis or pericarditis, the development of a fresh valvular lesion and failure of the heart. Or, if he be pushed and worried at school, he may become choreic—again with fresh inflammation of his heart. Other acute diseases, anæmia, impoverishment by improper feeding (whether insufficient or excessive), hardship and bad management generally are also common causes of broken compensation in childhood. Of course we must never forget physical exertion

in the keen and active school-boy, whose principal thought is of cricket, football, and cycling. A week ago I was consulted by a young gentleman of nineteen, about to go up to Cambridge, on the subject of the exercise that he might safely take during the winter term. Seven years ago he had acute rheumatism with mitral endocarditis, characterized by a systolic murmur at the apex. He made an excellent recovery; and, indeed, in the course of eighteen months the murmur disappeared. But two years ago an unfortunate event happened. After a football match he was seized with palpitation, which lasted for two hours. Ever since, palpitation has returned as often as he exerts himself, by running or boxing, and therewith a pricking pain under the left breast; whilst hot rooms bring on a feeling of precordial oppression and inability to take a deep breath. I found the heart enlarged on both sides, that is, dilatation with hypertrophy of both ventricles. There was no murmur, as the patient's doctor had told me, and therefore, strictly speaking, the case was not one of actual valvular disease with failure of compensation under physical stress. But it was even more instructive than that in connection with our present subject. It was an instance of *repaired* valvular disease in which the muscular walls were strained by physical exertion. The practical bearing of these prognostic considerations is obvious, as well as the importance of regarding every case of heart disease in a youth from this point of view. The parents dwell so anxiously upon the heart and the effects on it of exercise or exertion as to be oblivious to everything else. Our chief concern as practitioners is centred in the prevention of rheumatism which is lying in wait for him, and may haunt him throughout all these years; and our advice is mainly directed to the prevention of rheumatism and to the immediate and thorough treatment of it should it appear in any of its forms or phases however mild. Here, let me say by way of parenthesis, we appreciate one of the principal uses of correct prognosis, of prognosis practised on rational lines. I have called it an expression of opinion, a prophecy, but it is a forecast which, like a weather-forecast or a storm-warning, carries with it a patent suggestion of measures for prevention. In the youth with a valvular lesion of rheumatic origin, prognostic knowledge, if correctly employed, means successful prevention by control of the diet, by attention to the stomach and bowels, by close and continuous outlook for the appearance of any one of those aberrant phenomena or phases of rheu-

matism which I have just mentioned, as well as for the occasional facial twitching or nocturnal restlessness, which so often foreshadows an outbreak of chorea and acute inflammation of the heart.

During adult life, extending from twenty-one to forty-five, the prognosis of compensated valvular disease has to take into account an entirely new or additional series of influences which threaten to lead to failure. The danger of rheumatism, though ever present, has in great measure passed, and with it that of over-pressure at school and chorea. In young men exercise is still very likely to be abused, with strain as the result. The most important causes of new kinds that have to be foreseen and reckoned with are the work, business or profession which the man has taken up as the occupation of his life, with their many unfavorable actions on the circulation and nervous system, not to speak of other functions; the abuse of alcohol and tobacco; and syphilis. In women with valvular disease at this time of life the serious risks connected with maternity in its different phases have to be definitely estimated in making a forecast. And in both sexes it goes without saying that between twenty-one and forty-five the course and promise of the patient's life, whether fortunate or unfortunate, comfortable or hard, as well as the patient's disposition and character, are practically settled; and that the prognosis is to be modified accordingly. How different is the immediate and prospective forecast in mitral disease during this period of life from what it was in childhood and adolescence! How different the elements of the problem presented to us! How wide the survey that must be made by the practitioner who is responsible for advice as to the future—as to the occupation most suitable for a young man with aortic incompetence, the wisdom of marriage in the young woman with mitral stenosis; the limits that ought to be set in every case to work and responsibility undertaken and increased with every year of life, as well as to the enjoyment of pleasure, rest, and self-indulgence. Prognosis here demands the exercise of close observation and much thought; and happily it is peculiarly assisted by that intimate acquaintance with the individual patient in all his relations which the family practitioner possesses so fully as compared with the consultant.

We next arrive at that period of all periods of life which concerns us most anxiously as the advisers of the subject of valvular disease, namely, middle-age and early senescence—from forty-five to sixty. The outstanding influence of an unfavorable character

with which we have now to reckon in the prognosis of compensated valvular disease is degeneration, which for our present purpose we may regard as characterized pathologically by that complex condition called atheroma. Nutrition fails in the arteries—not only throughout the vascular system generally, with serious backward effect on the walls of the heart, but particularly in the coronaries themselves, whereupon the valves which they nourish break down and the myocardium is impoverished, weakened, and diseased. Now atheroma, as I attempted to show in the Lettsomian Lectures before the Medical Society last March, can usually be traced to some familiar cause if one will but take the trouble to do so—gout, glycosuria, and allied disorders of metabolism, including corpulence, alcoholism, Bright's disease, syphilis, or it may be to nervous strain, or to physical strain during attempts to recover health and vigor by muscular exercises. Degeneration is not a natural or necessary result or manifestation of old age, unless aging is to be defined as the result simply of wear-and-tear and nothing else. Here, then, there is plenty of scope for judgment in prognosis in older or aged subjects of valvular disease, and if prognosis be prompt and successful perhaps for timely prevention. Whilst we speak of vascular and cardiac degeneration and atheroma as the common result of all the causes and processes that I have just named, the pathological processes themselves are by no means identical any more than are the causes. Some of them are essentially progressive, I grant you, and therefore hopeless, such as Bright's disease; but others are amenable to treatment and therefore less unfavorable prognostically, such as simple strain and the outcome of injudicious indulgence in food and rest; in these the importance of timely provision is obvious. The danger of the advent of gout after thirty in the subjects of chronic valvular disease with family predisposition suggests the timely adoption of well-recognized measures for prevention. In a word, correct prognosis at this period of life, as at others, demands intelligent observation and consideration of the special dangers ahead. I know of no class of cases in which opinion and advice as to the future can be offered with less confidence than in senile heart disease, unless the problem be attentively surveyed from this point of view, for individual symptoms and signs, such as pain, faintness, palpitation, increased precordial impulse, weak apex-beat, and murmurs, to which we are accustomed to attach so much prognostic importance—angina, for example—are more or less common to all

the kinds of it, and therefore most difficult to employ as elements of prognosis.

Let me turn now from the compensated to the failing heart in valvular disease, and inquire how we can turn to prognostic use the clinical facts that characterize it. Our efforts to maintain compensation have been in vain. As we stand by the bedside of a child, a young man, a middle-aged or an old man, suffering from dropsy, orthopnœa, precordial distress, and the other miseries unhappily so familiar to us in valvular disease with failure, is it not too late to inquire which of the many causes of failure that we have reviewed is at work before us, and from it to estimate the prospect of recovery? It is not too late; and I maintain that a correct prognosis is impossible otherwise. Is it rheumatism, or chorea, or physical strain in the lad of seventeen that has changed the healthy-looking youngster of a month ago into this poor sufferer? The question must be deliberately asked and if possible answered. Is it worry, or drink, or exertion, that has broken down cardiac compensation in the same way in this man of thirty-five? Is it the responsibility and worry of a great business, or the consequent success and self-indulgence ending in disordered metabolism and gout or even Bright's disease, that is at the bottom of the urgent cardiac symptoms in the city merchant, who has had an attack of angina in hurrying to business in the morning, although to our knowledge he had had a cardiac murmur without symptoms for the last twenty years? The correctness of our answer to the anxious inquiries put to us by him and his friends will depend in great part on the trouble we take to ask these questions and to answer them faithfully.

But I must stop. You will begin to say by this time that prognosis in chronic valvular disease of the heart involves nothing short of universal knowledge. Indeed, this is very near the truth. In chronic cardiac disease, more than in any other disease, there is seen that balance of disease and repair, of disability and compensation, which exists and must be maintained in every damaged individual and every damaged organ if health is to be preserved, and which must be restored if health have been disturbed; and this balance is dependent on every condition and event of life. It is not from a knowledge of etiology and pathology alone that the practitioner is in a position to prognose, but also, and far more in most instances, by that knowledge of man individually and of the world that distinguishes the family practitioner.